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An intervention program was designed to study offsetting progressive school retardation of deprived children and the impact of the program on the community. This third report presents findings at the end of the fourth grade, 3 years after the experiment ceased. Subjects were 88 children, all Negro, and 27 of these served as a distal control group. Summer schools, home visitations, and weekly meetings recorded student and parent attitudes concerning achievement and aptitudes related to achievement. (Described in detail in an earlier report). The Binet IQ, Peabody Picture Vocabulary Test, and Metropolitan Achievement Test were administered in pre-, post-, and follow-up testing. Intervention caused a fairly sharp rise in Binet and PPVT scores at first; these leveled off, and gradually declined. Third year data indicated that differences between experimental and control children were significant on Binet IQ but not on the PPVT. Differences in achievement test scores were significant at the end of first grade but not at the end of fourth grade. It was found that younger siblings were also affected by the intervention programs used with mothers and subject children. (DR)

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THE EARLY TRAINING PROJECT:

A Seventh Year Report

Susan W. Gray, Rupert A. Klaus

PS 002173

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The Early Training Project: A Seventh Year Report

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The Early Training Project has been a field research study concerned with the development and testing over time of procedures for improving the educability of young children from low income homes. The rationale, the general design and methodology, and findings through the second year of schooling have been reported in some detail in The early training project for disadvantaged children, a report after five years, by Klaus and Gray (1968). A briefer report, up to school entrance, is given in Gray and Klaus (1965). The purpose of this report is to present the findings at the end of the fourth grade, three years after all experimental intervention had ceased.

The major concern of the Early Training Project was to study whether it was possible to offset the progressive retardation observed in the public schooling careers of children living in deprived circumstances. In addition, the writers undertook to study the spillover effect upon other children in the community and upon other family members.

The general research strategy was one of attempting to design a research "package" consisting of variables which--on the basis of research upon social class, cognitive development, and motivation--might be assumed to be relevant to the school retardation which is observed in deprived groups and which at the same time might be subject to the effects of manipulation. Because this was a problem with major social implications, we also tried to design a general treatment approach which it would be feasible to repeat on a large scale, in the event that the procedures proved successful.

Subjects were 88 children born in 1958. Sixty-one of these lived in a city of 25,000 in the upper South. The remaining 27, who served as a distal control group, resided in a similar city 65 miles away. The children were all Negro. When we initiated the study the schools of the city were still segregated; we chose to work with Negro children because in this particular setting we had reason to believe that our chances of success were greater with this group.

Major financial support for this study was received from the National Institute of Mental Health, under Mental Health Project Grant 5-R11-MH-765. Additional support for research staff during the later phases of the study was made possible through Grant HD-00973 from the National Institute of Child Health and Human Development, from the Office of Education, Contract OEC 3-7-070706-3118, and Grant 9174 from the Office of Economic Opportunity.
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The children were selected on the basis of parent's occupation, parent's education, income, and housing conditions. At the beginning of the study incomes were considerably below the approximate $3,000 used as the poverty line for a family of four. Occupations were either unskilled or semi-skilled; the educational level was eighth grade or below; housing conditions were poor. The median number of children per family at the beginning of the study was five; in about one-third of the homes there was no father present.

From the 61 children in the first city three groups were constituted by random assignment. The first group (T1) attended, over a period of three summers, a ten-week preschool designed to offset the deficits usually observed in the performance of children from disadvantaged homes. In addition, this group had three years of weekly meetings with a specially trained home visitor during those months in which the preschool was not in session. The second group (T2) had a similar treatment, except that it began a year later; the children received two summers of the special preschool and two years of home visits. The third group (T3) became the local control group, which received all tests but no intervention treatment. The fourth group (T4), the distal control group, was added to the design because of the somewhat ghetto-type concentration of Negroes in the first city. The local and distal control groups also made possible the study of spillover effects upon children and parents living in proximity to the experimental children. The general layout of the experimental design is given in Table 1. By reading down the columns, one may see the particular treatment and testing sequence followed for each of the four groups. Periodic testing is continuing for the children through elementary school.

The Intervention Program

The overall rationale for the intervention program grew out of the literature on child-rearing patterns in different social classes, plus the writers' own observations in low income homes. On the basis of this study, the intervention program for children was organized around two broad classes of variables: attitudes relating the achievement, and aptitudes relating to achievement. Under attitudes we were particularly interested in achievement motivation, especially as it concerns school-type activities, in persistence, in ability to delay gratification; and in general interest in typical school materials, such as books, crayons, puzzles, and the like. We were also concerned with the parent's attitude toward achievement, particularly in their aspirations for their children, especially as they related to schooling.

In the broad class of aptitude variables relating to achievement we were particularly interested in perceptual and cognitive development and in language. Children from low income homes have been shown to have deficits in these areas, all of which appear closely related to school success in the primary grades.

In the summer months, for 10 weeks the children met in assembled groups. Each of the two experimental groups had a head teacher, who was an experienced Negro first grade teacher. There were in addition three or four teaching assistants. These assistants were divided about equally as to race and sex.

TABLE I

LAYOUT OF GENERAL RESEARCH DESIGN

Treatments	T_1 Three Summer Schools	T_2 Two Summer Schools	T_3 Local Controls	T_4 Distal Controls
First Winter 1961-62	(Criterion development, curriculum planning, general tooling up)			
First Summer 1962	Pre-test Summer School Post-test	Pre-test Post-test	Pre-test Post-test	Pre-test Post-test
Second Winter 1962-63	Home Visitor Contacts			
Second Summer 1963	Pre-test Summer School Post-test	Pre-test Summer School Post-test	Pre-test Post-test	Pre-test Post-test
Third Winter 1963-64	Home visitor Contacts	Home visitor Contacts		
Third Summer 1964	Pre-test Summer School Post-test	Pre-test Summer School Post-test	Pre-test Post-test	Pre-test Post-test
Fourth Winter 1964-65	Home visitor Contacts	Home visitor Contacts		
Fourth Summer 1965	Follow-up Tests	Follow-up Tests	Follow-up Tests	Follow-up Tests
Fifth Summer 1966	Follow-up Tests	Follow-up Tests	Follow-up Tests	Follow-up Tests
Seventh Summer 1968	Follow-up Tests	Follow-up Tests	Follow-up Tests	Follow-up Tests

The work with the parents in the project was carried on largely through a home visitor program in which a specially trained preschool teacher made weekly visits to each mother and child. Both the home program and the school program are described in considerable detail in Before first grade (Gray, Klaus, Miller, and Forrester, 1966) and in Klaus and Gray (1968).

Prior to and after each summer session children in all four groups were tested on several instruments. From the first summer certain standardized tests of intelligence and language were used, along with a number of less formal instruments. At the end of first grade, achievement tests were added. This testing schedule is shown in Table 1. In general the .05 level of significance was used.

Results

The detailed results of the testing program through May, 1966, the end of the second grade for the children, are given in Klaus and Gray (1968). This paper gives the results as they relate to the spring and summer testings of 1968 with some additional information on performance of younger siblings. The same kinds of analyses were used for the 1968 data as were used in the earlier paper.

In 1968 the following tests were administered to all children still residing in middle Tennessee: the Binet, the Peabody Picture Vocabulary Test, and the Metropolitan Achievement Test. The analyses here reported are based only upon those children available for testing with the exception of one child in the distal control group.

The Binet scores are given in Table 2, and are portrayed graphically in Figure 1. A Lindquist (1953) Type 1 analysis of the results of 1962-1968, in terms of IQ, gave a significant F of 4.45 for the four groups, and F of 16.81 for repeated measures, and F for interaction of groups over time of 3.51. All of these were significant at the .01 level or beyond. Next an analysis was made by the use of orthogonal comparisons. These are given in Table 3. Here it may be seen that the two experimental groups remained significantly superior to the two control groups. The comparison of the first and the second experimental groups for 1968 showed an F of less than 1.00. The comparison of the two control groups, however, yielded an F that, although not conventionally significant, was still large enough (3.52 where $F_{.95}=3.96$) to be suggestive of a sharper decline in the distal than in the local control group. As was true of earlier analyses the larger part of the variance appeared to be carried by the second experimental group and the distal control group.

The scores across the ten administrations of the Peabody Picture Vocabulary Test are given in Table 4 in MA and IQ form. A Lindquist (1953) Type 1 analysis of variance was performed for the MA scores. F for groups was 5.16, indicating a significant effect of the experimental treatment upon the children's performance. F for repeated testings was 376.73, an effect that would be clearly expected when MA scores were used. These were selected in preference to IQ scores on this particular test since the IQ scores appear to lack discrimination at certain levels. The interaction between groups and time was non-significant. Orthogonals were next used.

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TABLE 2

MEAN STANFORD-BINET MA AND IQ SCORES FOR THE FOUR TREATMENT GROUPS AT EACH ADMINISTRATION

Date of Administration	T1(N=19) MA (mo.)	T1(N=19) IQ	T2(N=19) MA (mo.)	T2(N=19) IQ	T3(N=18) MA (mo.)	T3(N=18) IQ	T4(N=23) MA (mo.)	T4(N=23) IQ
May 1962	40.7	87.6	43.8	92.5	40.3	85.4	40.3	86.7
Aug. 1962	50.7	102.0	46.9	92.3	44.3	88.2	43.4	87.4
May 1963	55.6	96.4	56.0	94.8	53.2	89.6	50.4	86.7
Aug. 1963	59.3	97.1	60.6	97.5	55.0	87.6	52.3	84.7
Aug. 1964	68.0	95.8	71.6	96.6	62.3	82.9	59.4	80.2
Aug. 1965	83.8	98.1	86.3	99.7	79.4	91.4	77.0	89.0
June 1966	88.7	91.2	93.4	96.0	86.8	87.9	82.9	84.6
July 1968	106.0	86.7	111.4	90.2	104.7	84.9	96.2	77.7

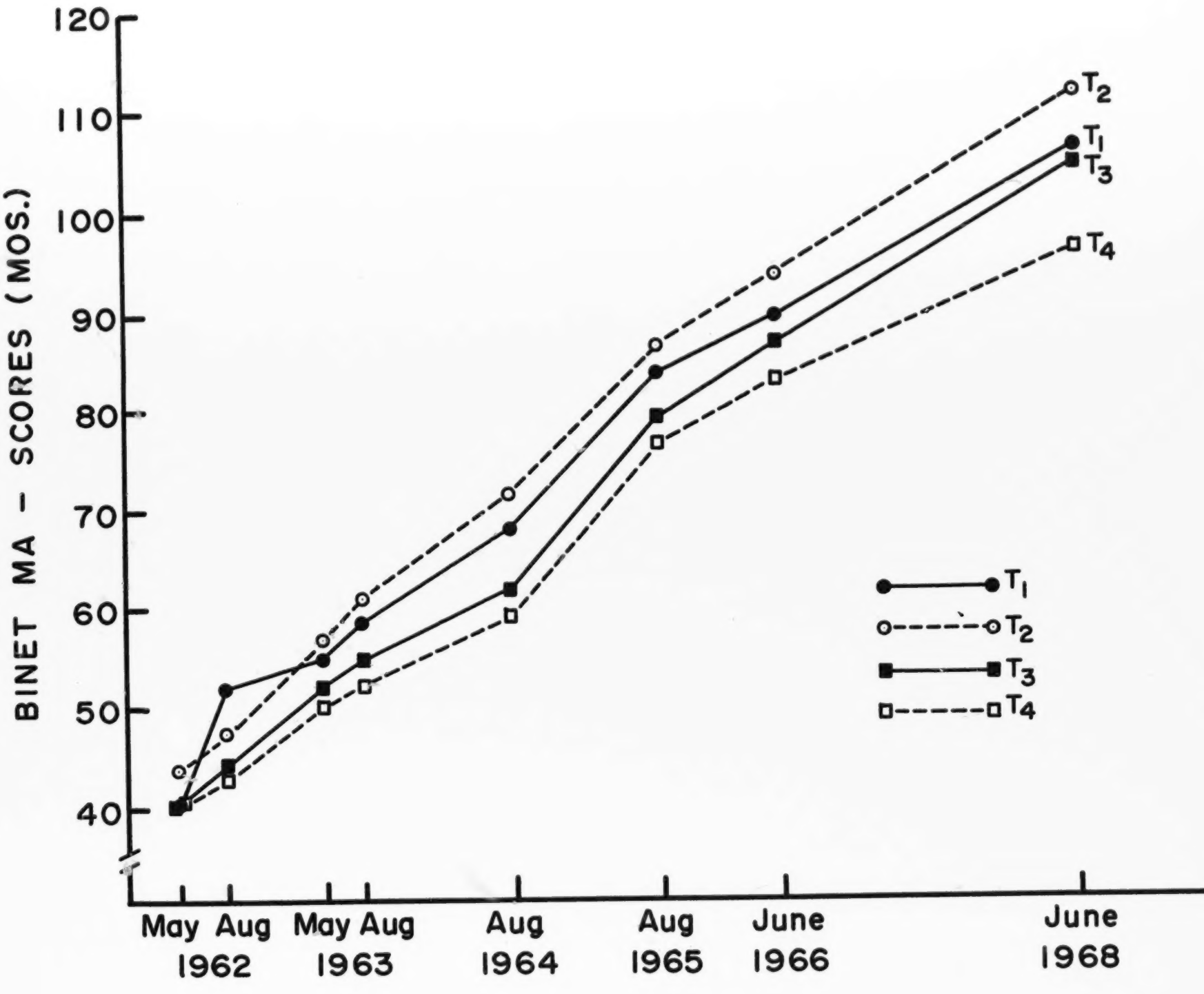

Figure 1: Mental ages for experimental and control groups on the Stanford-Binet.

TABLE 3

ORTHOGONAL COMPARISONS OF TREATMENT GROUP SUMS FOR BINET IQ SCORES FOR THE EIGHT ADMINISTRATIONS

Date of Administration	HO: T1=T2+T3+T4		HO: T2=T3+T4		HO: T3=T4	
	F Ratio	Conclusion	F Ratio	Conclusion	F Ratio	Conclusion
Aug. 1962	12.67*	T1>T2+T3+T4	1.44	T2=T3+T4	<1.00	T3=T4
May 1963	2.91	T1=T2+T3+T4	3.36	T2=T3+T4	<1.00	T3=T4
	HO: T1+T2=T3+T4		HO: T1=T2		HO: T3=T4	
May 1962	2.07	T1+T2=T3+T4	1.53	T1=T2	<1.00	T3=T4
Aug. 1963	18.53*	T1+T2>T3+T4	<1.00	T1=T2	<1.00	T3=T4
Aug. 1964	29.94*	T1+T2>T3+T4	<1.00	T1=T2	<1.00	T3=T4
Aug. 1965	11.12*	T1+T2>T3+T4	<1.00	T1=T2	<1.00	T3=T4
June 1966	5.99*	T1+T2>T3+T4	1.18	T1=T2	<1.00	T3=T4
July 1968	7.50*	T1+T2>T3+T4	<1.00	T1=T2	3.53	T3=T4

*p<.05; F.95=3.97.

Here was found that T1 + T2 was significantly greater than T3 + T4 up until 1968, in which year differences were not significant. As may be seen from Table 4, differences in mean scores were still apparent. Heterogeneity had increased over time, however, so that differences were no longer significant. In no analysis at any point of time was either experimental group significantly superior to the other. Nor did either control group show itself to be significantly superior to the other one.

The results for the Metropolitan Achievement Test are given in Table 5. A Lindquist (1953) Type 1 analysis was performed on each subtest, and orthogonal comparisons made. In the interest of brevity a table of orthogonal comparisons is not given. In 1965, at the end of first grade, the experimental children were significantly superior on three of the four tests used at that time: word knowledge, word discrimination, and reading. For arithmetic computation scores, F was less than 1.00. The local controls were also somewhat superior to the distal controls on these tests, an indication possibly of horizontal diffusion or, either in interaction or independently, a somewhat better instructional program. In 1966 five subtests were given. This time only two were significant, word knowledge and reading. On the other three tests, however, the F's ranged from 2.69 to 2.84, suggesting probabilities at about the .10 level. In neither year was T1 significantly superior to T2. The highest F was 1.16, where $F_{.95}$ is 3.97. In the comparisons of T3 and T4, T3 was superior to T4 on reading and arithmetic computation. On word knowledge, word discrimination, and spelling the F's ranged from 3.19 to 3.85, suggesting probabilities beyond the .10 level ($F_{.90} = 2.77$). At the end of the fourth year no significant effects were found with the single exception of reading, on which T3 was superior to T4. There is some suggestion of residual effect since in six of the seven possible comparisons of experimental and controls, the experimentals were superior. Also on all seven possible comparisons the local control group was superior to the distal control group.

The Binet was administered in all four groups to those younger siblings who were of testable age. This was first done in 1964 and again in 1966. Since the 1966 findings have not been previously reported they are presented here in Table 6. In 1964, 57 children were tested. Fifty of these same children were tested again in 1966, along with 43 additional siblings who were too young to test in 1964.

An analysis of co-variance was performed on these scores, with the IQ's at first testing of the target-age children used as the covariable. Also, where there were two younger siblings in the same family, one was dropped, so that the analysis was based on 87 children. Separate analyses were also performed for the 1964 and the 1966 results of all children who were re-tested. In addition, an analysis was performed on the 1966 results for those children who were being tested for the first time.

On all younger siblings tested in 1966 the F between groups was not significant at the .05 level ($F = 3.97$). It was significant beyond the .10 level, and therefore we made further analyses. Orthogonal comparisons were used, with the hypotheses shown in Table 7. This is the same general approach as used with the target children. All orthogonal comparisons showed significant differences for the testing of all younger siblings in 1966: the combined experimental group siblings were superior to the

TABLE 4

MEAN PPVT MENTAL AGE SCORES AND IQ EQUIVALENTS FOR THE FOUR TREATMENT GROUPS FOR THE TEN ADMINISTRATIONS

Date of Administration	Test Form	T1(N=19)		T2(N=19)		T3(N=18)		T4(N=23)	
		MA (mo.)	IQ	MA (mo.)	IQ	MA (mo.)	IQ	MA (mo.)	IQ
May 1962	A	30.0	69.5	30.6	70.1	29.4	66.4	32.2	74.0
Aug. 1962	B	36.8	75.3	33.1	63.9	32.7	65.8	30.7	62.8
May 1963	A	44.8	79.0	40.7	69.6	39.1	69.3	39.5	69.8
Aug. 1963	B	45.0	78.4	50.7	83.6	38.4	64.0	37.6	63.8
May 1964	B	55.6	81.2	60.1	85.5	45.8	65.4	48.7	70.9
Aug. 1964	A	59.1	83.0	62.0	87.0	50.6	72.4	48.7	69.6
June 1965	B	74.2	89.0	76.2	90.3	67.6	83.0	67.3	84.0
Aug. 1965	A	70.6	86.2	76.5	91.8	65.4	80.2	66.3	83.4
June 1966	A	78.1	86.7	81.9	89.3	75.4	83.9	71.2	80.7
July 1968	A	96.4	84.5	100.3	86.7	91.7	81.8	89.3	78.7

TABLE 5

METROPOLITAN ACHIEVEMENT TEST GRADE EQUIVALENT MEAN SCORES FOR THE VARIOUS SUBTESTS FOR THE THREE ADMINISTRATIONS

Subtest and Year	T1	T2	T3	T4
Word knowledge:				
1965	1.69	1.73	1.79	1.37
1966	2.32	2.47	2.29	1.98
1968	3.58	3.90	3.54	3.27
Word discrimination:				
1965	1.68	1.81	1.82	1.37
1966	2.64	2.73	2.65	2.20
1968	3.73	3.95	3.76	3.47
Reading:				
1965	1.72	1.82	1.84	1.46
1966	2.52	2.75	2.56	2.11
1968	3.52	3.89	3.72	3.10
Arithmetic computation:				
1965	1.52	1.62	1.54	1.43
1966	2.41	2.55	2.49	2.05
1968	3.92	4.07	4.06	3.79
Spelling:				
1966	2.42	2.85	2.60	1.99
1968	4.26	4.69	4.24	3.67
Language:				
1968	3.52	4.00	3.63	3.17
Arithmetic problem-solving and concepts:				
1968	3.31	3.54	3.75	3.26

TABLE 6

INITIAL BINET SCORES OF TREATMENT GROUP CHILDREN AND YOUNGER SIBLINGS IN TWO TESTINGS

Testing	Groups	Mean Scores (First Testing, 1962) for Treatment Group Children with Younger Siblings			Mean Scores for Younger Siblings		
		N	CA	IQ	N	CA	IQ
1964 Testing of Younger Siblings Born in 1959 and 1960	T1	12	47	82	13	54	82
	T2	16	46	89	21	53	83
	T3	7	50	84	9	54	71
	T4	12	48	88	14	62	74
1966 Retesting of Younger Siblings Initially Tested in 1964	T1	12	47	82	13	78	85
	T2	14	46	92	19	76	85
	T3	5	46	82	7	76	78
	T4	11	48	86	13	77	75
1966 Testing of Younger Siblings Born in 1961 and 1962	T1	10	44	87	11	58	84
	T2	9	47	91	10	52	87
	T3	7	48	83	9	56	76
	T4	12	47	88	15	55	84
1966 Testing of All Younger Siblings	T1	15	50	84	24	69	84
	T2	17	46	91	29	68	86
	T3	8	47	84	16	65	77
	T4	15	47	86	28	63	80

combined control group siblings; the T1 siblings were superior to the T2 siblings; and the T3 siblings were superior to the T4 siblings. When the children who were tested for the first time are separated out, it is clear, both in the 1966 and the 1964 data, that most of the variance was being carried by younger siblings closer in age to the target age children. There are some interesting implications of these general results on younger siblings which will be examined in more detail in the discussion section.

Discussion

The results on the one test of intelligence which was used consistently from the initiation of the program in 1962 until the testing at the end of the fourth grade, in 1968, are very much in line with what might be expected. For this was an intervention program that used a broad gauge approach and which was relatively successful in terms of improving the educability of young children from low income homes. Intervention caused a rise in intelligence which was fairly sharp at first, then leveled off, and finally began to show decline once intervention ceased. The control groups on the other hand tended to show a slight but consistent decline with the single exception of a jump between entrance into public school and the end of first grade. Differences between experimentals and controls on Binet IQ were still significant at the end of the third year after intervention ceased. All four groups have shown a decline in IQ after the first grade but the decline, as shown in Figure 1, tended to be relatively parallel. Perhaps the remarkable thing is, with the relatively small amount of impact over time that differences should still be significant. After all, the child experienced only five mornings of school a week for ten weeks for two or three summers, plus weekly home visits during the other nine months for two or three years. This suggests that the impact was not lost. It was not sufficient, however, to offset the massive effects of a low income home in which the child had lived since birth onward.

The results on the PPVT showed a pattern that is not dissimilar. There was a rise during intervention, including the first grade, then a leveling-off and a slight decline. Here, however, difference between groups, although consistent were no longer significant.

The importance of the school situation for the maintenance or loss of a gain should be weighed. The children for the most part remained in schools in which the entire population was Negro. Eight of the local children at the end of first grade did enroll in schools that had previously been all white. Four more changed during the next two years. None of the distal children attended schools with white children. Since in this area, as in many places, race tends to be confounded with social class, the children in the study did not in general have the advantage of classmates with relatively high expectancies. There is some evidence that in both of the all-Negro schools the general teaching-learning situation, although fair, was less adequate than in the schools that have formerly been all white. This, plus the continuing effect of the home situation and the immediate community, took its toll. There are some data on achievement test scores to be presented later which suggest the impact of the two all-Negro schools which most of the children attended.

On the one achievement battery administered from first to fourth grade, the Metropolitan Achievement Test (Table 5), significant differences did

TABLE 7

ORTHOGONAL COMPARISONS
OF BINET SCORES OF YOUNGER SIBLINGS

	HO: T1+T2 = T3+T4		HO: T1 = T2		HO: T3 = T4	
	F Ratio	Conclusion	F Ratio	Conclusion	F Ratio	Conclusion
All Younger Siblings 1966	3.48	T1+T2 = T3+T4	.75	T1 = T2	.00	T3 = T4
Younger Siblings First Tested in 1966	.77	T1+T2 = T3+T4	.04	T1 = T2	.80	T3 = T4
Younger Siblings Retested in 1966						
1964 Results	8.13*	T1+T2 > T3+T4	.74	T1 = T2	.01	T3 = T4
1966 Results	4.72*	T1+T2 > T3+T4	5.11*	T1 > T2	2.07	T3 = T4

*$p < .05$; F .95 = 3.97

not appear in 1968 on any of the subtests with sole exception of the reading score, in which the local control group was superior to the distant control group. The experimentals had been superior to the controls on three tests in 1965 and on two tests in 1966. One might interpret this as showing that the intervention program did have measurable effects upon test performance at the end of first grade, but that by the end of fourth grade, the school program had failed to sustain at any substantial level the initial superiority. Although disappointing, this is perhaps not surprising in a test battery so dependent upon specific school instruction.

An interesting sidelight is thrown on this matter by looking at the performance on the Metropolitan Achievement Test of the eight children from the local school who at the end of first grade enrolled in previously all-white schools. An attempt was made, on the basis of first grade achievement tests and home ratings of educational aspirations, to match these eight children with eight who remained in the Negro school. Admittedly, this is a chancy business, and one which should not be taken too seriously. Table 8 presents the gains in grade equivalents on the Metropolitan Achievement Tests from the end of first grade to the end of fourth grade. On the four subtests common to both grade levels the picture is a clear one of more gain in the children who changed schools, varying from .8 to 1.4 years' greater gain. These data did not seem appropriate for subjection to statistical analysis. They do suggest, however, the fairly obvious: that performance on achievement tests is directly related to school experience. The children who changed schools have made approximately "normal" gain for their three years; the children who did not change have gained two years or less during the three years from first through fourth grade.

The results on the younger siblings are to the writers among the most interesting findings of the study. We have termed the process by which such results are achieved and the product of that process as vertical diffusion, to suggest that this is a spread of effect down the family from the mother and possibly the target-age child to a younger child. In this study the effects of the older sibling and the mother upon the younger child were confounded. Some research currently being carried on under the direction of one of the writers has made possible the separation of the influence of mother and older siblings. Results so far indicate that most of the effect is coming from the mother. It is plausible to assume that the role of the mother was the more influential since considerable effort was expended by the home visitor over a period of three years with the first experimental group and over two years with the second experimental group. The emphasis of the home intervention was on making the mother a more effective teacher, or more generally, an effective educational change agent for her target-age child. Also worthy of note is the finding that vertical diffusion appeared more clearly in the younger siblings born in 1959 and 1960, who were within one to two and a half years in age to the older siblings. The siblings born in 1961 and 1962, when pulled out for separate analysis, did not show an effect which approached statistical significance. Vertical diffusion also appeared more operative in the first than in the second experimental group. A plausible explanation is that intervention lasted a year longer with the first group and began a year earlier. There is also in the data some suggestion of a process we have examined in more detail elsewhere (Klaus and Gray, 1968), one that may be termed horizontal diffusion, the spread of effect from one family to

TABLE 8

MEAN GAINS ON THE MAT OVER A 3-YEAR PERIOD
FOR 8 ETP CHILDREN IN INTEGRATED SCHOOLS AND MATCHES IN NEGRO SCHOOLS

	Mean Gains 1965-68			
	Word Knowl.	Word Disc.	Read.	Arith.
ETP Ss in Integrated Schools Beginning Fall 1965	3.1	2.8	2.7	2.9
ETP Ss in Negro Schools Matched to the First Group on Spring 1965 MAT and on Verbal Rating by Home Visitor	1.7	2.0	1.6	1.7
Difference	1.4	.8	1.1	1.2

another. This we have in general analyzed by comparing the local and distal control groups. Here we found that the younger siblings in the local control group showed themselves to be superior to the distal control group.

To the extent that the findings on vertical diffusion have generality, they seem to point to the efficacy of a powerful process in the homes, presumably mediated by the parent, which may serve to improve the educability of young children. Before a second conclusion is reached by the reader, however, to the effect that "parent education" is the answer, we would like to point out that our procedure was clearly parent education with a difference. It was conducted in the home; it was done by skilled preschool teachers with some experience in working in the homes; it was highly concrete and specific to a given mother's life situation; it was continuous over a long period of time. Indeed, parent education probably is the answer, but in low income homes a very different kind of parent education from that usually provided may be needed.

Seven years after the Early Training Project began, in 1969, intervention programs for young children from low income homes are nationwide. These programs differ tremendously in the length and timing of the intervention, in the objectives and consistency with which they are followed, in the degree of specificity of the program, and in the length and extent of follow-up study of the sample.

It is hardly surprising, with the wild heterogeneity of such programs, that nationwide assessment of programs, such as the Westinghouse Survey of Project Head Start (1969), would find relatively small evidence of positive effects upon the child's achievement and personal adequacy. Leaving aside all the problems of measuring personal adequacy and even achievement in young children, such lack of results is only to be expected in situations where the bad or inappropriate sc cancels out the good that little positive effect can be found, especially if the evaluation is somewhat premature.

At this point in time it seems appropriate to look more closely at those programs which have clearly followed an adequate research design, specified and carefully monitored their treatments, and conducted adequate follow-up study of the sample. Such programs are relatively few in number, for their history is short.

In the Early Training Project we have been more fortunate than most. The study was initiated nearly four years before the tidal wave of interests in such early intervention that came about through such nationwide programs as Project Head Start and Title I and III of the Elementary and Secondary Education Act. We have worked in a setting in which we have been free from administrative pressures either to change our procedures or to make premature conclusions from our data. The two communities in which families live have had little outward mobility; even at the end of seven years attrition is only a minor problem. For these reasons we believe the data collected over seven years with our four groups of children do shed some light upon the problem of progressive retardation and the possibility that it can be offset.

Our answer as to whether such retardation can be offset is one of cautious optimism. The effects of our intervention program are clearly evidenced through the second year of public schooling, one year after inter-

vention ceased. There is still an effect, most apparent in the Binet, after two more years of non-intervention. Our data on horizontal and vertical diffusion, especially the latter, gives us some hope that intervention programs can have a lasting effect that goes beyond the children that were the target of that intervention program.

Still, it is clear from our data, with a parallel decline across the four groups in the second through fourth grades, that an intervention program before school entrance, such as ours, cannot carry the entire burden of offsetting progressive retardation. By some standards the Early Training Project might be seen as one of relatively massive intervention. And yet a colleague of ours (Miller, 1969) has estimated that in the years prior to school entrance the maximum amount of time that the children in the project could have spent with the Early Training Project staff was approximately 600 hours, less than two percent of their waking hours from birth to six years. Perhaps the remarkable thing is that the effect lasted as well and as long as it did. In a similar vein, we have estimated the amount of these contacts which was in the home as a maximum of 110 hours, are about 0.3 percent of the waking hours of the child from birth to six years. Surely it would be foolish not to realize that, without massive changes in the life situation of the child, home circumstances will continue to have their adversive effect upon the child's performance.

In 1968 the authors wrote:

"The most effective intervention programs for preschool children that could possibly be conceived cannot be considered a form of innoculation whereby the child forever after is immune to the effects of a low income home and of a school inappropriate to his needs. Certainly, the evidence on human performance is overwhelming in indicating that such performance results from the continual interaction of the organism with its environment. Intervention programs, well conceived and executed, may be expected to make some relatively lasting changes. Such programs, however, cannot be expected to carry the whole burden of providing adequate schooling for children from deprived circumstances; they can provide only a basis for future progress in schools and homes that can build upon that early intervention."

In 1969 we see no reason to alter this statement. Our seventh year results only serve to underscore its truth.

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